ABSTRACT OF THE DISCLOSURE

In a method for determining the square root of a long-bit number using a short-bit processor, the long-bit number is assumed to be $c \times 2^{2K}+d$, where c, $d < 2^{2k}$, and its solution is assumed to be $(a \times 2^{K}+b)^2$. The 'a' is determined by using a bisection method to obtain the floor value of the square root of 'c'. In order to obtained the value of 'b', there is derived a successive substitution equation: $b_{[n]}= (c-a^2) \times 2^{2k}+(d-b_{[n-1]}^2) / 2^{2(k+1)}$. An initial value is given to 'b' to execute the successive substitution equation recursively several times until the equation is convergent.